

What is claimed is:

1. An image processing method for image data that uses image data and an exposure correction amount for the image data, said image processing method comprising:

5 determining a brightness value correction amount of said image data by using a brightness value reference value, which is to become a criterion for an image quality adjustment regarding brightness value;

10 determining a contrast correction amount of said image data by using a contrast reference value, which is to become a criterion for an image quality adjustment regarding contrast;

modifying said brightness value correction amount to be smaller as said exposure correction amount is increased;

15 in a case where said exposure correction amount is a positive correction amount, modifying said contrast correction amount to be smaller as said exposure correction amount is increased; and

adjusting a brightness value and a contrast of said image data by applying said modified brightness correction amount and contrast correction amount.

2. An image processing method according to claim 1, wherein

20 in a case where said exposure correction amount is a negative correction amount, modifying said contrast correction amount to be larger as the absolute value of said exposure correction amount is increased; and

said brightness value correction amount is modified smaller in geometric progression.

25 3. An image processing method according to claim 1 or 2, wherein

the modification of said brightness value correction amount is executed by differentiating a degree of variation of said brightness value correction amount in a case where said exposure correction amount is less than a given exposure correction amount, from a degree of variation of said brightness value correction amount in a case where said exposure

correction amount is equal to or more than said given exposure correction amount.

4. An image processing method according to claim 1 or 2, wherein

the modification of said brightness value correction amount is executed by decreasing

5 the rate of reduction of said brightness value correction amount as said exposure correction amount is increased.

5. An image processing method according to claim 4, wherein

the modification of said brightness value correction amount is executed by decreasing

10 said bright value correction amount in geometric progression as said exposure correction amount is increased.

6. An image processing method according to claim 1, wherein

the modification of said contrast correction amount is executed by multiplying a

15 square root of said contrast correction amount by a coefficient that has said exposure correction amount as its parameter.

7. An image processing method according to claim 6, further comprising:

analyzing said image data to obtain a contrast characteristic value that indicates a

20 characteristic regarding the contrast of said image data;

wherein the determination of said contrast correction amount is executed in a way to reduce a deviation between said contrast reference value and said obtained contrast characteristic value.

25 8. An image processing method according to claim 1, further comprising:

analyzing said image data to obtain a brightness value characteristic value that indicates a characteristic regarding a brightness value of said image data;

analyzing said image data to obtain a contrast characteristic value that indicates a characteristic regarding the contrast of said image data;

determining said brightness value correction amount in a way to reduce a deviation between said brightness value reference value and said obtained brightness value characteristic value, and dividing the determined bright value correction amount by an exponential function that has said exposure correction amount as its parameter; and

5 determining said contrast correction amount in a way to reduce a deviation between said contrast reference value and said obtained contrast characteristic value, and multiplying a square root of the determined contrast correction amount by a coefficient that has said exposure correction amount as its parameter.

10 9. An image processing method according to claim 1, further comprising:

receiving contrast correction information that specifies a tendency of a contrast correction for said image data;

determining a contrast correction amount of said image data based on said received contrast correction information; and

15 multiplying a square root of said determined contrast correction amount by a coefficient that has said exposure correction amount as its parameter.

10. An image processing method according to claim 1, further comprising:

20 outputting an image based on said brightness value-adjusted and contrast-adjusted image data.

11. An image processing device that executes image processing for image data by using image data and an exposure correction amount for the image data, said image processing device comprising:

25 a correction amount determination unit that determines a brightness value correction amount and a contrast correction amount of said image data by using a brightness value reference value and a contrast reference value, which are to become a criterion for an image quality adjustment regarding brightness value;

a brightness value correction amount modification unit that decreases said brightness

value correction amount as said exposure correction amount is increased;

a contrast correction amount modification unit that, in a case where said exposure correction amount is a positive correction amount, reduces said contrast correction amount as said exposure correction amount is increased; and

5 an image quality adjustment unit that adjusts a brightness value of said image data by applying said modified brightness value correction amount and adjusts the contrast of said image data by applying said modified contrast correction amount.

12. A recording medium that is stored with program instructions, which cause image
10 processing for image data to be executed in a computer with the use of image data and an exposure correction amount for the image data, said recording medium comprising:

a computer instruction that determines a brightness value correction amount of said image data by using a brightness value reference value, which is to become a criterion for an image quality adjustment regarding brightness value;

15 a computer instruction that determines a contrast correction amount of said image data by using a contrast reference value, which is to become a criterion for an image quality adjustment regarding contrast;

a computer instruction that modifies said brightness value correction amount to be smaller as said exposure correction amount is increased;

20 a computer instruction that, in a case where said exposure correction amount is a positive correction amount, modifies said contrast correction amount to be smaller as said exposure correction amount is increased; and

a computer instruction that adjusts a brightness value and a contrast of said image data by applying said modified brightness correction amount and contrast correction amount.

25 13. An image output method that outputs an image based on image data that has undergone image processing using an exposure correction amount, said image output method comprising:

determining a brightness value correction amount and a contrast correction amount of

said image data by using a brightness value reference value and a contrast reference value, which are to become a criterion for an image quality adjustment regarding brightness value;

modifying said brightness value correction amount to be smaller as said exposure correction amount is increased;

5 in a case where said exposure correction amount is a positive correction amount, modifying said contrast correction amount in a way to reduce said contrast correction amount as said exposure correction amount is increased;

adjusting a brightness value of said image data by applying said modified bright value correction amount, as well as adjusting a contrast of said image data by applying said
10 modified contrast correction amount; and

outputting an image based on said brightness value-adjusted and contrast-adjusted image data.

14. An image processing method according to claim 13, wherein

15 in a case where said exposure correction amount is a negative correction amount, the modification of said contrast correction amount is executed by increasing said contrast correction amount as an absolute value of said exposure correction amount is increased.

15. An image output device that outputs an image based on image data that has undergone
20 image processing using an exposure correction amount, said image output device comprising:

a correction amount determination unit that determines a brightness value correction amount and a contrast correction amount of said image data by using a brightness value reference value and a contrast reference value, which are to become a criterion for an image quality adjustment regarding brightness value;

25 a brightness value correction amount modification unit that decreases said brightness value correction amount as said exposure correction amount is increased;

a contrast correction amount modification unit that, in a case where said exposure correction amount is a positive correction amount, reduces said contrast correction amount as said exposure correction amount is increased;

an image quality adjustment unit that adjusts a brightness value of said image data by applying said modified brightness value correction amount and adjusts a contrast of said image data by applying said modified contrast correction amount; and

5 an image output unit that outputs an image based on said brightness value-adjusted and contrast-adjusted image data.

16. A recording medium that stores program instructions, which are executed in a computer for outputting an image based on image data that has undergone image processing using an exposure correction amount, said recording medium comprising:

10 a computer instruction that determines a brightness value correction amount and a contrast correction amount of said image data by using a brightness value reference value and a contrast reference value, which are to become a criterion for an image quality adjustment regarding brightness value;

15 a computer instruction that modifies said brightness value correction amount to be smaller as said exposure correction amount is increased;

a computer instruction that, in a case where said exposure correction amount is a positive correction amount, modifies said contrast correction amount in a way to reduce said contrast correction amount as said exposure correction amount is increased;

20 a computer instruction that adjusts a brightness value of said image data by applying said modified brightness value correction amount and adjusts a contrast of said image data by applying said modified contrast correction amount; and

a computer instruction that outputs an image based on said brightness value-adjusted and contrast-adjusted image data.

25 17. An image processing method that executes image processing for image data by using image data and information of an exposure correction executed for the image data, said image processing method comprising:

analyzing said image data to obtain a brightness value characteristic value that indicates a characteristic regarding brightness value of said image data;

analyzing said image data to obtain a contrast characteristic value that indicates a characteristic regarding contrast of said image data;

reducing a deviation between a brightness value reference value, which is to become a criterion for an image quality adjustment regarding brightness value, and said obtained
5 brightness value characteristic value;

reducing a deviation between a contrast reference value, which is to become a criterion for an image quality adjustment regarding contrast, and said obtained contrast characteristic value;

based on said exposure correction information, adjusting a degree of reduction of said
10 deviation regarding brightness value as a level of an exposure correction executed for said image data is increased; and

based on said exposure correction information, adjusting a degree of reduction of said deviation regarding contrast as a level of a positively-headed exposure correction executed for said image data is increased.

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18. An image processing method according to claim 17, wherein

the adjustment of said contrast deviation reduction amount is executed based on said exposure correction information, by increasing the degree of reduction of said deviation regarding contrast as an absolute level of a negatively-headed exposure correction executed
20 for said image data is increased.

19. An image processing device that executes image processing for image data by using image data and information of an exposure correction executed for the image data, said image processing device comprising:

25 a brightness value characteristic value obtaining unit that analyzes said image data to obtain a brightness value characteristic value that indicates a characteristic regarding brightness value of said image data;

a contrast characteristic value obtaining unit that analyzes said image data to obtain a contrast characteristic value that indicates a characteristic regarding contrast of said image

data;

a brightness value adjustment unit that reduces a deviation between a brightness value reference value, which is to become a criterion for an image quality adjustment regarding brightness value, and said obtained brightness value characteristic value;

5 a contrast adjustment unit that reduces a deviation between a contrast reference value, which is to become a criterion for an image quality adjustment regarding contrast, and said obtained contrast characteristic value;

a brightness value deviation reduction amount adjustment unit that, based on said exposure correction information, reduces a degree of reduction of said deviation regarding
10 brightness value as a level of an exposure correction executed for said image data is increased; and

a contrast deviation reduction amount adjustment unit that, based on said exposure correction information, reduces a degree of reduction of said deviation regarding contrast as a level of a positively-headed exposure correction executed for said image data is increased.

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20. A recording medium that is stored with image processing program instructions, which cause image processing for image data to be executed in a computer with the use of image data and an exposure correction amount for the image data, said recording medium comprising:

20 a program instruction that determines a brightness value correction amount of said image data by using a brightness value reference value, which is to become a criterion for an image quality adjustment regarding brightness value;

a program instruction that determines a contrast correction amount of said image data by using a contrast reference value, which is to become a criterion for an image quality
25 adjustment regarding contrast;

a program instruction that modifies said brightness value correction amount to be smaller as said exposure correction amount is increased;

a program instruction that, in a case where said exposure correction amount is a positive correction amount, modifies said contrast correction amount to be smaller as said

exposure correction amount is increased; and

a program instruction that adjusts a brightness value and a contrast of said image data by applying said modified brightness correction amount and contrast correction amount.